Week ending 1 Dec 2000
CALORIMETER SUBSYSTEM (WN Johnson)
Contributions from NRL, Ecole Polytechnique

CAL Management

Crisis in reorganization/redistribution of French contributions to GLAST continues to create continuous telephone and video conferences. The objective is to determine the organization, contributions and responsible parties and to codify these determinations in a Memorandum of Agreement. All parties - NRL, CEA, IN2P3 - involved in conferences and related meetings associated with this crisis in the international collaboration.

Presentation of Glast project at the CNRS commission review (Oscar + Gilles) on Monday 20 and Tuesday 21.

CAL CsI Crystal Elements

Meeting at NRL with Per Carlson, Steffan Carius (Kalmar Univ), and Leif Nilsson. Kalmar Univ and industry will support KTH in testing of CsI crystals. Current CsI specification was reviewed and plans for testing equipment were discussed. NRL recommended acceleration of delivery of first lot of CsI crystals to May '01 to support EM pre-electronics module (PEM) development in 2001. NRL will support KTH in the development and delivery of 1st crystal test sets to test this first crystal procurement.

Phlips and Bogaert continued work on details of the tests to be performed at NRL during visit on 6 – 8 Dec. Bogaert and Ferreira prepared crystals and test fixtures to support these tests at NRL.

Meeting at CEA/Saclay for optical measurements connected to the vibration test and technical work associated to the baseline model development (organized by project manager Didier Bédérède) (many colleagues involved in the meeting). Participation to measurements and analysis started at Saclay (Gilles).

Edition of a technical note : "Investigation of decay time constants in CsI(Tl)" by Gilles Bogaert and Michel Rouger. This note reports on work made at Polytechnique for ballistic deficit modeling purpose, that was asked to be written as a note by Neil Johnson.

CAL Pre Electronics Module (Bogaert)

Preparation for vibration test of VM1 continues. Test is scheduled for December 6 to 8. Test shake plan writing in progress (Ferreira, Bogaert).

CAL Analog Front End Electronics (Ampe, NRL)

Began radiation testing of two additional ADCs.

Past testing included two parts. Max189 has best catastrophic latch up (higher LET).
Previous results:
Maxim Max189 currently using on calorimeter, about 70 LET.
Burr-Brown ADS7816 currently on calorimeter, about 15-20 LET.

New radiation test results:
MAX194: 14 bit ADC that is in a 16 pin chip, requires -5V power.
Minimum sensitivity found is 70 LET. This is comparable to the MAX189 ADC sensitivity.

MAX1241: 12 bit ADC, pin-for pin compatible to MAX189, new on the market I think. Able to operate at lower supply voltage than MAX189, and available in smaller footprint.
Could not get it to latchup. LET is greater than 150. Checked that it did not latch up for energies that easily caused latch-up on MAX189.

Differential non-linearity (DNL) testing on the new part types was also performed. DNL of MAX1241 is better than the MAX189 (best DNL tested so far) except for a few bins that have many more counts. DNL of MAX194 (binned to 12 bit resolution) is worse than MAX189.

Work progress for Brookhaven beam radiation testing is going along well. Test there is scheduled for next week.

CAL Balloon Flight (Grove, NRL)

Initiated manufacturing of NRL-built parts of pseudo-grid for balloon flight.

BFEM performance -- We temperature-cycled the CAL two more times, from 25C to 40C, to complete the stabilization of the optical bonds.

We (NRL) have completed estimates of the medium and heavy cosmic ray rates through the BFEM instrument during the upcoming Palestine balloon flight. We plan to use these GCRs to develop the on-orbit CAL calibration algorithms. We expect ~200 C, ~200 O, and ~30 Fe per hour at float altitude to pass through the TKR and CAL. All of these will be useful to develop algorithms to find charge and mass-changing interactions. See the study at http://gamma.nrl.navy.mil/glast/tech_memos/cremeballoon.pdf. (Note that this site is glast password protected.)

CAL Software/Design Verification (Grove, NRL)

Ground software, Monte Carlo -- We continued to discuss requirements for MC Hits records within the CAL s/w group, the simulation group, and the core s/w group. We (NRL) continue to maintain that the MC must have full energy accounting, reporting energy depositions in all materials.

Ground software, CAL team -- Minutes of the Wednesday CAL s/w team meeting can be found at http://gamma.nrl.navy.mil/glast/calsw/nov00/minutes29nov00.htm.
